

Scale, Essential Fish Habitat and Watershed Management of Gulf Fisheries: a Conceptual View

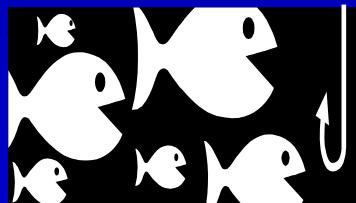
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Approach

- Review factors important to successful recruitment
- Develop a conceptual model of the connection between environment-habitat-production in tidal river estuaries
- Illustrate an estuarine recruitment bottleneck with data from coastal Mississippi

Potential fish fauna



Pleistocene events



Zoogeographic barriers



Physiological factors



Biological interactions



Potential community



Natural disturbances



Natural community



Human disturbances



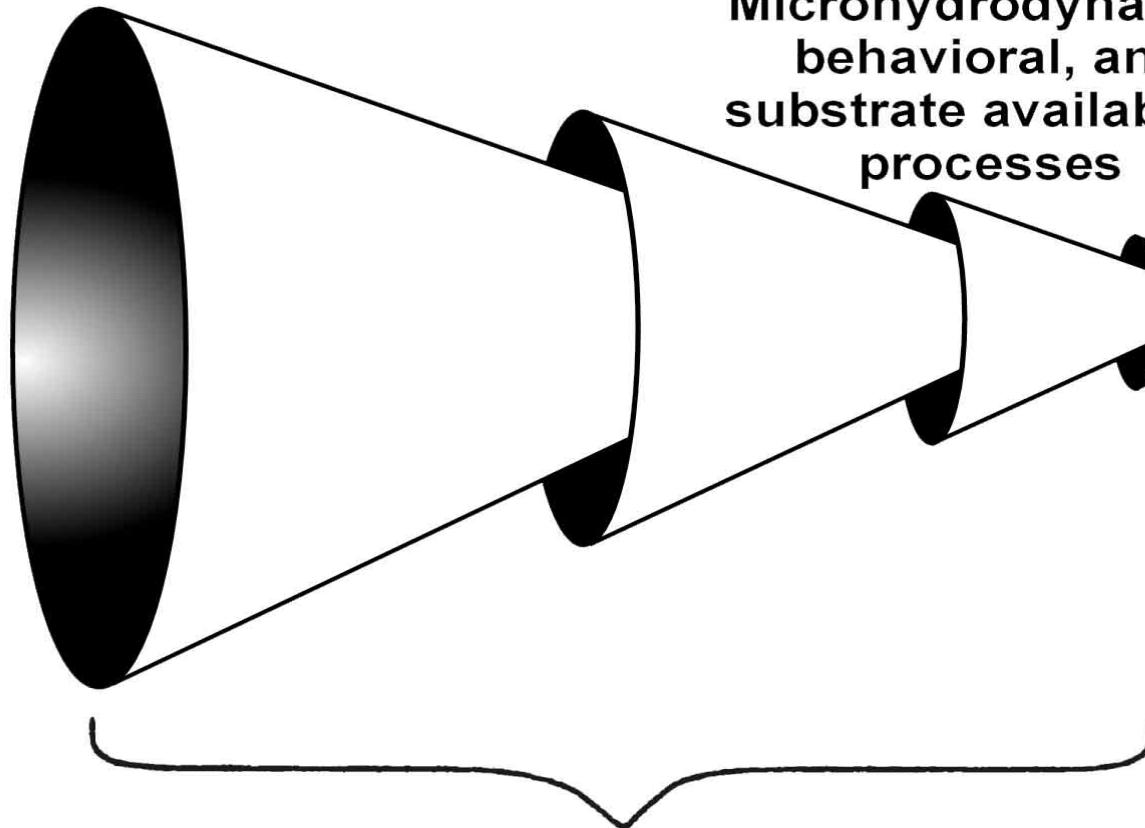
Observed community

Rate of arrival of larvae

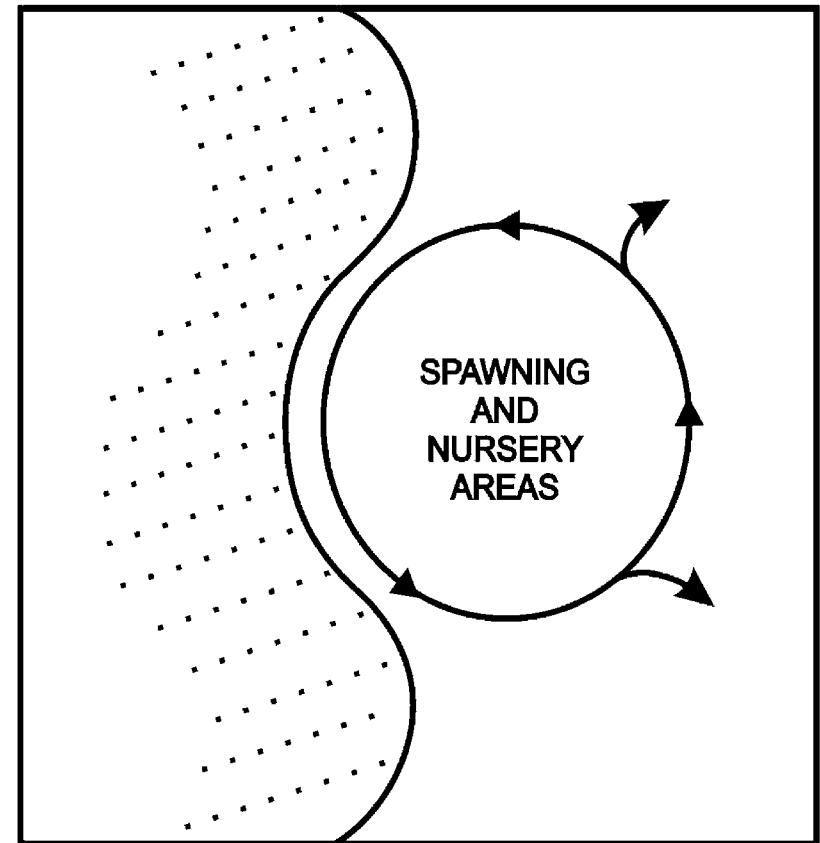
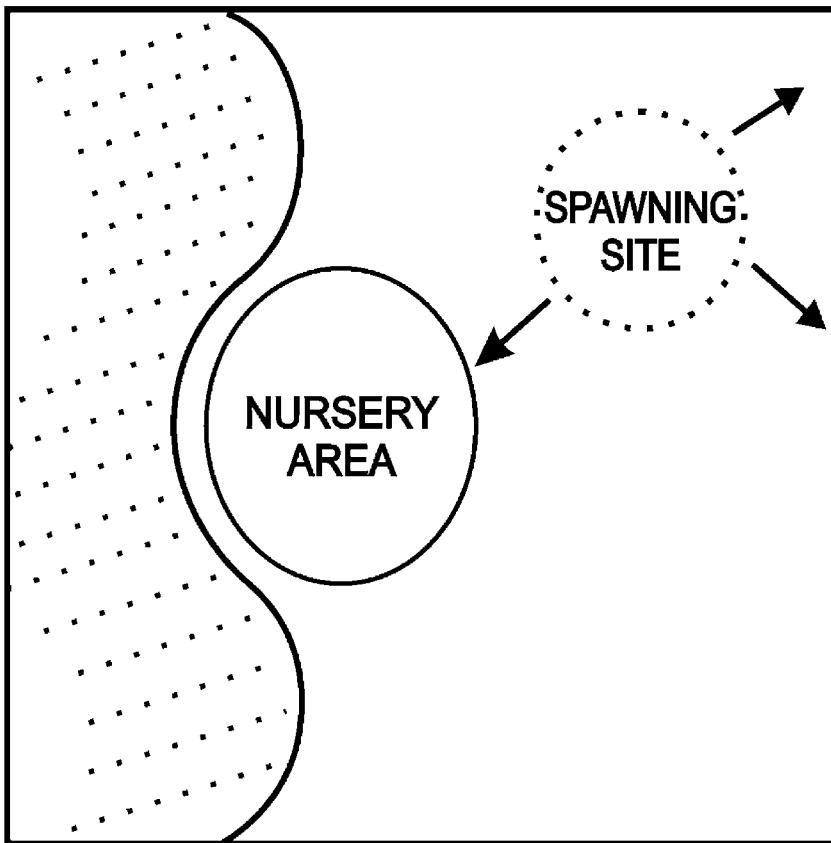
Larval pool **Physical transport processes**

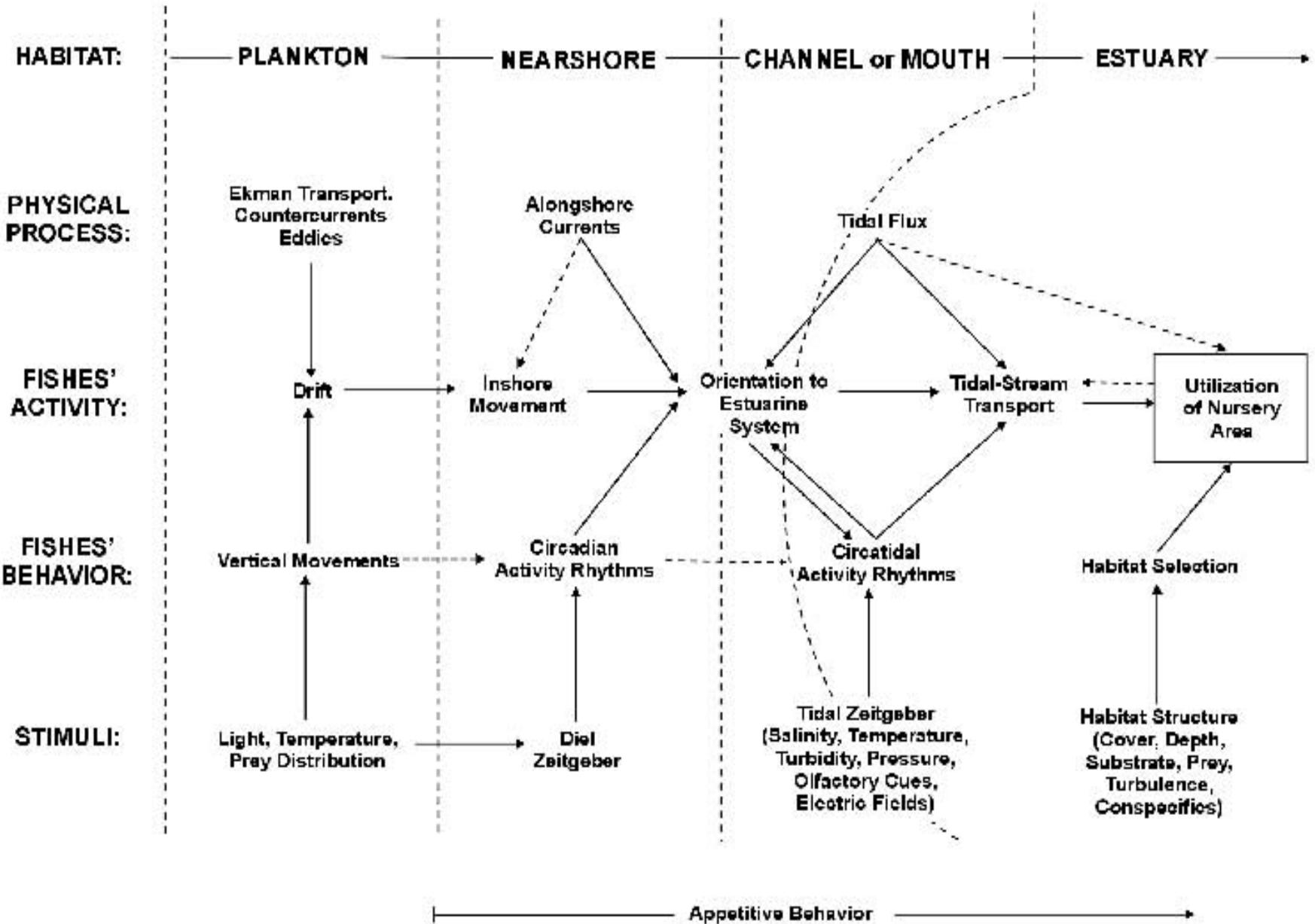
Microhydrodynamic,
behavioral, and
substrate availability
processes

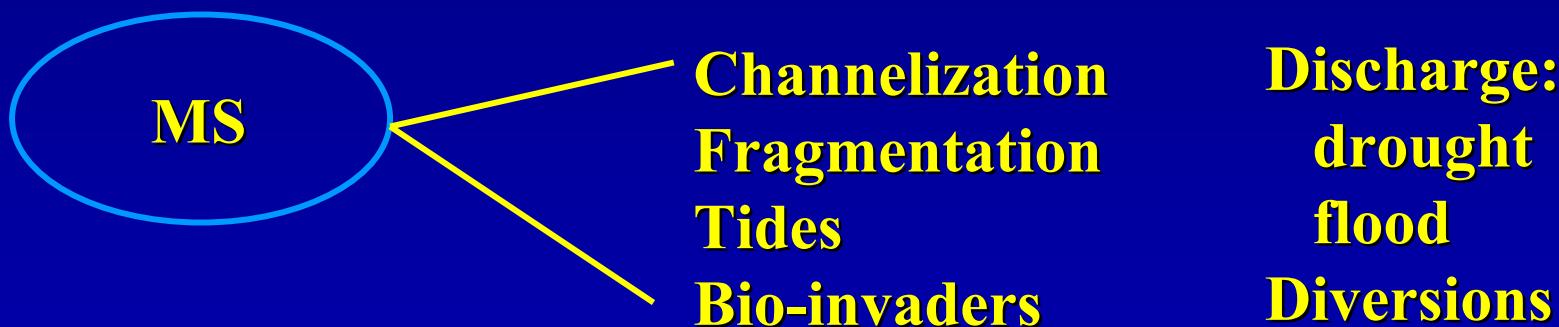
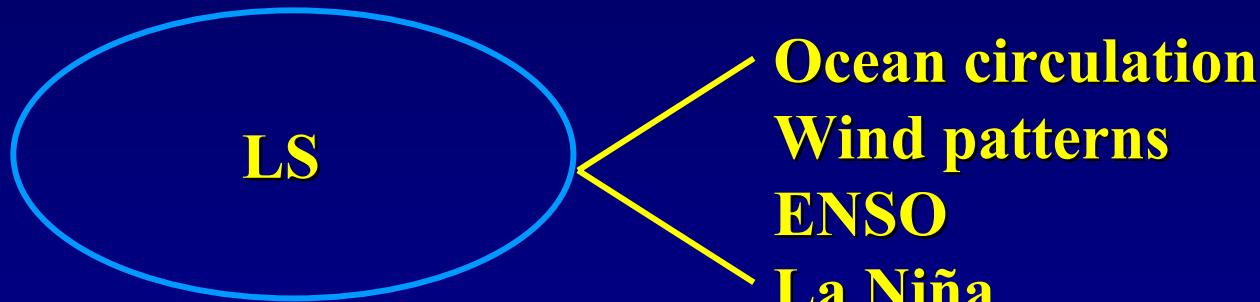
Disturbance and
biotic interactions
competition and
predation



Processes influencing settlement rate







Environmental
Perturbation



Dynamic
Habitat

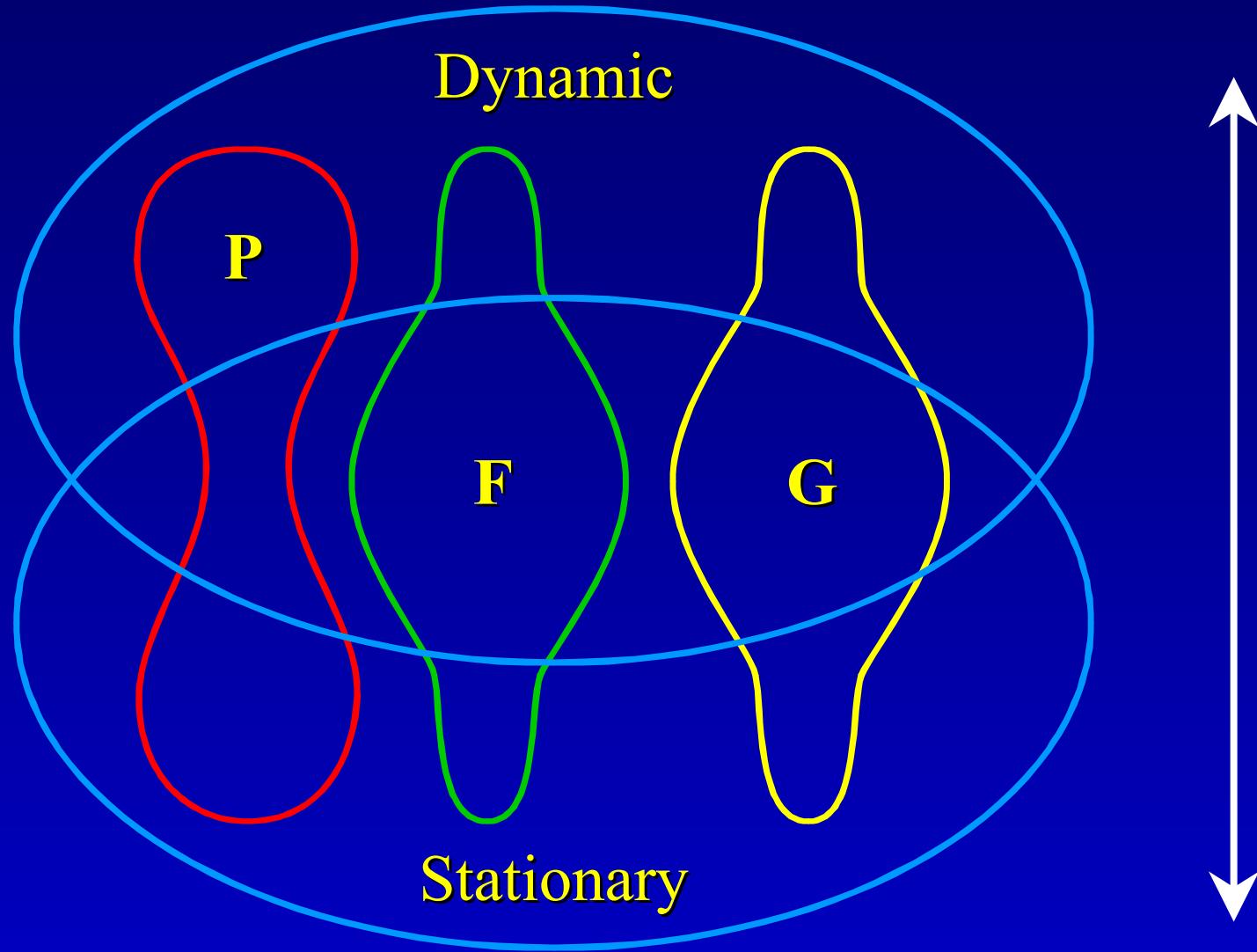
Production
Area

Stationary
Habitat

River or
Tidal Inflow

Recruitment





Species/taxa	Near-pristine	Beach	Altered
Mysids ²	13.40 ± 3.39^a	5.91 ± 2.38^a	6.41 ± 2.82^b
<i>Palaemonetes</i> spp ²	0.137 ± 0.024^a	0.223 ± 0.086^a	0.050 ± 0.014^b
<i>Gobiosoma bosc</i>	1.334 ± 0.739	0.851 ± 0.445	0.228 ± 0.099
<i>Anchoa mitchilli</i> ²	0.164 ± 0.527^a	0.481 ± 0.253^a	0.036 ± 0.958^b
<i>Brevoortia patronus</i> ¹	0.313 ± 0.115	0.339 ± 0.168	0.078 ± 0.035
<i>Micropogonias undulatus</i> ²	0.020 ± 0.028^a	0.133 ± 0.063^b	0.023 ± 0.054^a
<i>Leiostomus xanthurus</i> ¹	0.650 ± 0.451	0.271 ± 0.130	0.078 ± 0.020
<i>Farfantepenaeus aztecus</i> ²	0.484 ± 0.133^a	0.217 ± 0.056^a	0.051 ± 0.014^b
<i>Litopenaeus setiferus</i> ²	0.070 ± 0.018^a	0.065 ± 0.027^{a,b}	0.025 ± 0.046^b
<i>Callinectes sapidus</i> ¹	0.096 ± 0.011^a	0.132 ± 0.043^a	0.065 ± 0.015^b
Overall Taxa Richness	55	52	34
Overall Diversity (1/D)	4.38	5.92	3.61



Acknowledgements

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